

Serial No.: 09/209,676
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invention.

Please amend claim 16 as follows:

16. (Twice Amended) A method for increasing the signal-to-noise ratio in the characteristic optical response of an array having subpopulations of sensor elements comprising:

- a) providing an array comprising:
 - i) at least a first subpopulation comprising first sensor elements; and
 - ii) a second subpopulation comprising second sensor elements;
 - b) contacting said array with a composition comprising at least a first target analyte;
 - c) obtaining a first measurement from at least two of said sensor elements of at least one of said subpopulations;
 - d) summing said first measurements from said sensor elements; and
 - e) performing a statistical analysis on said first measurements.
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Please amend claim 17 as follows:

17. (Amended) The method according to claim 16 further comprising obtaining at least a first control measurement and adjusting the baseline of said first measurement against said first control measurement.

[Please amend claim 18 as follows:]

18. (Amended) The method according to claim 16 wherein the signal-to-noise ratio is increased by a factor of at least 10.

Please amend claim 20 as follows:

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c³ 20. (Amended) The method of claim 16, 25 or 27, wherein said sensor elements are beads and said array comprises a population of beads dispersed on a substrate.

Please amend claim 25 as follows:

25. (Amended) A method for amplifying the characteristic optical response of an array having subpopulations of sensor elements comprising:

- a) providing an array comprising:
 - i) at least a first subpopulation comprising first sensor elements; and
 - ii) a second subpopulation comprising second sensor elements;
- b) contacting said array with a composition comprising at least a first target analyte;
- c) obtaining a first measurement from at least two of said sensor elements of at least one of said subpopulations; and
- d) summing the optical responses.

Please amend claim 26 as follows:

26. (Amended) A method according to claim 25 further comprising obtaining at least a first control measurement and adjusting the baseline of said first measurement using said first control measurement.

Please amend claim 27 as follows:

c⁴ 27. (Amended) A method comprising:

- a) providing an array with a plurality of subpopulations of sensor elements;
- b) contacting said array with a composition comprising at least a first target

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analyte;

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- c) obtaining first and second measurements from at least first and second sensor elements, respectively, from at least a first subpopulation; and
 - d) performing a statistical analysis on said first and second measurements.
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Please amend claim 31 as follows:

31. (Amended) The method according to claim 20, further comprising determining outlying beads and excluding outlying beads from said subpopulation.

Please amend claim 32 as follows:

32. (Amended) The method according to claim 16, 45 or 27, wherein said statistical analysis comprises calculating the mean of at least said first and second measurements.

Please amend claim 33 as follows:

33. (Amended) The method according to claim 16, 45 or 27, wherein said statistical analysis comprises calculating the standard deviation of at least said first and second measurements.

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Please amend claim 34 as follows:

34. (Amended) The method according to claim 16, 45 or 27, further comprising evaluating the statistical validity of said measurements.

Please amend claim 35 as follows:

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C5 35. (Amended) The method according to claim 16, 45 or 27, further comprising performing a second statistical analysis on said measurements.

Please amend claim 38 as follows:

C6 38. (Amended) The method according to claim 16, 45 or 27, further comprising comparing said statistical analysis of measurements obtained from at least two subpopulations.

Please amend claim 40 as follows:

40. (Amended) A method comprising:

a) providing an array comprising beads on a substrate comprising a plurality of subpopulations of sensor elements, wherein each sensor element comprises a bioactive agent that will bind a target analyte, and at least two of said subpopulations comprise different bioactive agents that will bind the same target analyte;

b) contacting said array with a composition comprising at least a first target analyte;

C7 c) obtaining a measurement from the optical response of each sensor element;
and

d) performing a statistical analysis on said measurements from each sensor element.

Please add new claim 45 as follows:

C8 --45. The method according to claim 25, further comprising:

e) performing a statistical analysis on said measurements of at least one of said subpopulations.--

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Please add new claim 46 as follows:

--46. The method according to claim 16, 25, 27 or 40, wherein said substrate is selected from the group consisting of glass and plastic.--

Please add new claim 47 as follows:

--47. The method according to claim 20, wherein said substrate is selected from the group consisting of glass and plastic.--

Please add new claim 48 as follows:

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--48. The method according to claim 17 or 26 wherein said adjusting comprises subtracting said first control measurement from said first measurement.--

REMARKS

First, Applicants would like to thank Examiner for her interview on October 4, 2001. As discussed in the interview, Applicants and Examiner agreed that the following procedure would best meet the requirements of the Response to Amendment sent by Examiner. Because the Examiner requested a substitute Specification, Applicants are submitting a substitute Specification in accordance with 37 CFR 1.125(a). Please note that the specification was amended prior to our first amendment, and no new matter was added. Only typographical errors were corrected. In addition, amended Claims are also being sent again, because the claim amendments have not been entered yet. Entry thereof into the instant application is respectfully requested.